

AMENDMENTS TO THE CLAIMS

1. (Currently amended) A method of fabricating a steel part, the method comprising the steps of:

· preparing and casting a steel ~~having~~ consisting essentially of the following composition in percentage by weight: $0.06\% \leq C \leq 0.25\%$; $0.5\% \leq Mn \leq 2\%$; traces $\leq Si \leq 3\%$; traces $\leq Ni \leq 4.5\%$; traces $\leq Al \leq 3\%$; traces $\leq Cr \leq 1.2\%$; traces $\leq Mo \leq 0.30\%$; traces $\leq V \leq 2\%$; traces $\leq Cu \leq 3.5\%$; ~~and~~ $0.005\% \leq S \leq 0.2\%$;

~~wherein the steel contains 5 ppm to 50 ppm of B, and 0.005% to 0.04% of Ti,~~
where the Ti content is equal to at least 3.5 times the N content of the steel;

~~wherein the steel further contains at least one of the following elements: Ca up to 0.007%; Te up to 0.03%; Se up to 0.05%; Bi up to 0.05%; and Pb up to 0.1%, and~~

wherein the steel satisfies at least one of the following conditions:

* $0.5\% \leq Cu \leq 3.5\%$;

* $0.5\% \leq V \leq 2\%$;

* $2\% \leq Ni \leq 4.5\%$ and $1\% \leq Al \leq 2\%$;

the remainder being iron and impurities resulting from preparation;

· hot deforming the cast steel at least once at a temperature in the range 1100°C to 1300°C in order to obtain a blank of the part;

· controlled cooling of the blank for the part in still air or forced air to obtain a bainite microstructure; and

· heating the steel to perform precipitation annealing before or after machining the part from said blank,

wherein the hot deformation is forging;

wherein when the steel satisfies the condition regarding ~~comprises 0.5% to 3.5%~~ of Cu, the precipitation annealing is performed in the range of 425°C to 500°C for 1 h to 10 h, when the steel satisfies the condition regarding ~~comprises 0.5% to 2% of~~ V, the precipitation annealing is performed in the range of 500°C to 600°C for more than 1 h, and when the steel satisfies the condition regarding ~~comprises 2% to 4.5% of Ni and 1% to 2% of~~ Al, the precipitation annealing is performed in the range of 500°C to 550°C for more than 1 h;

wherein the controlled cooling of the blank is performed at a rate less than or equal to 3°C/s in the range of 600°C to 300°C ,

wherein the part has a tensile strength R_m of 1000 MPa to 1300 MPa, and a yield strength R_e of greater than or equal to 900 MPa, and

wherein the bainite microstructure obtained after controlled cooling of the blank is 100% bainite.

2-4. (Cancelled)

5. (Currently amended) A method of fabricating a steel part, the method comprising the steps of:

· preparing and casting a steel consisting essentially of the following composition in percentage by weight: $0.06\% \leq C \leq 0.25\%$; $0.5\% \leq Mn \leq 2\%$; $traces \leq Si \leq 3\%$; $traces \leq Ni \leq 4.5\%$; $traces \leq Al \leq 3\%$; $traces \leq Cr \leq 1.2\%$; $traces \leq Mo \leq 0.30\%$; $traces \leq V \leq 2\%$; $traces \leq Cu \leq 3.5\%$; $0.005\% \leq S \leq 0.2\%$;
~~The method according to claim 1, wherein the steel further contains 0.005% to 0.06% of Nb, Nb; 5 ppm to 50 ppm of B, 0.005% to 0.04% of Ti, where the Ti content is equal to at least 3.5 times the N content of the steel;~~
at least one of the following elements: Ca up to 0.007%; Te up to 0.03%; Se up to 0.05%; Bi up to 0.05%; and Pb up to 0.1%, and

wherein the steel satisfies at least one of the following conditions:

* $0.5\% \leq Cu \leq 3.5\%$;

* $0.5\% \leq V \leq 2\%$;

* $2\% \leq Ni \leq 4.5\%$ and $1\% \leq Al \leq 2\%$;

the remainder being iron and impurities resulting from preparation;

· hot deforming the cast steel at least once at a temperature in the range 1100°C to 1300°C in order to obtain a blank of the part;

· controlled cooling of the blank for the part in still air or forced air to obtain a bainite microstructure; and

· heating the steel to perform precipitation annealing before or after machining the part from said blank,

wherein the hot deformation is forging;

wherein when the steel satisfies the condition regarding Cu, the precipitation annealing is performed in the range of 425°C to 500°C for 1 h to 10 h, when the steel satisfies the condition regarding V, the precipitation annealing is performed in the range of 500°C to 600°C for more than 1 h, and when the steel satisfies the condition regarding Ni and Al, the precipitation annealing is performed in the range of 500°C to 550°C for more than 1 h;

wherein the controlled cooling of the blank is performed at a rate less than or equal to 3°C/s in the range of 600°C to 300°C,

wherein the part has a tensile strength R_m of 1000 MPa to 1300 MPa, and a yield strength R_e of greater than or equal to 900 MPa, and

wherein the bainite microstructure obtained after controlled cooling of the blank is 100% bainite.

6-7. (Cancelled)

8. (Previously presented) The method according to claim 1, wherein the C content of the steel lies in the range 0.06% to 0.20%.

9. (Previously presented) The method according to claim 8, wherein Mn content of the steel lies in the range 0.5% to 1.5%, and wherein the Cr content lies in the range 0.3% to 1.2%.

10. (Previously presented) The method according to claim 8, wherein the Ni content of the steel lies in the range traces to 1%.

11. (Previously presented) The method according to claim 8, wherein the Ni content of the steel lies in the range 2% to 4.5%, and wherein the Al content lies in the range 1% to 2%.

12-18. (Cancelled)

19. (Original) A steel part, obtained by the method according to claim 1.

20-21. (Cancelled)

22. (Currently amended) The method according to claim 1, wherein the conditions regarding V, Ni and Al are not satisfied, and therefore the steel satisfies the condition regarding~~comprises 0.5% to 3.5%~~ Cu, and the precipitation annealing is performed in the range of 425°C to 500°C for 1 h to 10 h.

23. (Currently amended) The method according to claim 1, wherein the conditions regarding Cu, Ni and Al are not satisfied, and therefore the steel satisfies the condition regarding~~comprises 0.5% to 2%~~ V, and the precipitation annealing is performed in the range of 500°C to 600°C for more than 1 hr.

24. (Currently amended) The method according to claim 1, wherein the conditions regarding Cu and V are not satisfied, and therefore the steel satisfies the condition regarding~~comprises~~ ~~2% to 4.5% Ni and 1% to 2% Al~~, and the precipitation annealing is performed in the range of 500°C to 550°C for more than 1 hr.